

**COMPREHENSIVE VALIDATION PACKAGE**

ATL Applications

INVENTORY SHEET

WORK ORDER # 0908628A

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Completed by:

*Kara McKiernan*

(Signature)

Kara McKiernan/ Document Control

(Print Name & Title)

09/21/09

(Date)

**WORK ORDER #: 0908628A**

**Work Order Summary**

<b>CLIENT:</b>	Mr. Taeko Minegishi Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494	<b>BILL TO:</b>	Accounts Payable Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494
<b>PHONE:</b>	800-825-5343	<b>P.O. #</b>	16512
<b>FAX:</b>	781-247-4305	<b>PROJECT #</b>	16512
<b>DATE RECEIVED:</b>	08/28/2009	<b>CONTACT:</b>	Ausha Scott
<b>DATE COMPLETED:</b>	09/17/2009		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
01A	101537	ATL Applications
02A	101538	ATL Applications
03A	101539	ATL Applications
04A	100493	ATL Applications
05A	100494	ATL Applications
06A	100495	ATL Applications
06AA	100495 Lab Duplicate	ATL Applications
07A	100399	ATL Applications
08A	100400	ATL Applications
09A	100401	ATL Applications
10A	100402	ATL Applications
11A	100403	ATL Applications
12A	100404	ATL Applications
13A	101170	ATL Applications
14A	101171	ATL Applications
15A	101172	ATL Applications
15AA	101172 Lab Duplicate	ATL Applications

Continued on next page

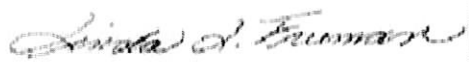
**WORK ORDER #: 0908628A**

Work Order Summary

<b>CLIENT:</b>	Mr. Taeko Minegishi Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494	<b>BILL TO:</b>	Accounts Payable Environmental Health & Engineering, Inc. 117 Fourth Avenue Needham, MA 02494
<b>PHONE:</b>	800-825-5343	<b>P.O. #</b>	16512
<b>FAX:</b>	781-247-4305	<b>PROJECT #</b>	16512
<b>DATE RECEIVED:</b>	08/28/2009	<b>CONTACT:</b>	Ausha Scott
<b>DATE COMPLETED:</b>	09/17/2009		

<u>FRACTION #</u>	<u>NAME</u>	<u>TEST</u>
16A	101173	ATL Applications
17A	Method Blank	ATL Applications
17B	Method Blank	ATL Applications
17C	Method Blank	ATL Applications
18A	CCV	ATL Applications

CERTIFIED BY:



Laboratory Director

DATE: 09/17/09

This report shall not be reproduced, except in full, without the written approval of Air Toxics Ltd.

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630  
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

**LABORATORY NARRATIVE**  
**Ozone by Radiello 172**  
**Environmental Health & Engineering, Inc.**  
**Workorder# 0908628A**

Sixteen Radiello 172 (Ozone) samples were received on August 28, 2009. The procedure involves reaction of 4-pyridylaldehyde with 3-methyl-2-benzothiazolinone hydrazone to yield the corresponding azide. The absorbance is then measured at 430 nm using a spectrophotometer. Results are reported in uG and uG/m3.

Sampling rate of 24.6 mL/min was provided by the manufacturer.

**Receiving Notes**

There were no receiving discrepancies.

**Analytical Notes**

Results were calculated based on 25 deg C without temperature correction. The actual exposure time was used to calculate sample concentrations and reporting limits.

An exposure time of 21600 minutes was used for the QC samples.

All media used for the sampling were supplied by the client. Blank subtraction was not performed on the sample results since the media used for Method Blanks may be from a different lot than the media used for the samples.

**Definition of Data Qualifying Flags**

Eight qualifiers may have been used on the data analysis sheets and indicate as follows:

B - Compound present in laboratory blank greater than reporting limit.

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the detection limit.

M - Reported value may be biased due to apparent matrix interferences.

N - The identification is based on presumptive evidence.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

## **Sample Results and Raw Data**

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# AIR TOXICS LTD.

ATL Application # 62 for RAD 172 (Ozone)

Spectrophotometer

Field Sample ID.	Lab Sample ID.	Collection Date	Analysis Date	Dilution Factor	Reporting Limit (ug)	Reporting Limit (ug/m3)	Amount (ug)	Amount (ug/m3)
101537	0908628A-01A	8/24/2009	8/31/2009	1.00	0.64	1.4	ND	ND
101538	0908628A-02A	NA	8/31/2009	1.00	0.64	1.2	ND	ND
101539	0908628A-03A	8/24/2009	8/31/2009	1.00	0.64	1.4	ND	ND
100493	0908628A-04A	8/24/2009	8/31/2009	1.00	0.64	1.4	ND	ND
100494	0908628A-05A	8/24/2009	8/31/2009	1.00	0.64	1.4	ND	ND
100495	0908628A-06A	8/24/2009	8/31/2009	1.00	0.64	1.4	12	27
100495 Lab Duplicate	0908628A-06AA	8/24/2009	8/31/2009	1.00	0.64	1.4	12	27
100399	0908628A-07A	8/24/2009	8/31/2009	1.00	0.64	1.3	ND	ND
100400	0908628A-08A	8/24/2009	8/31/2009	1.00	0.64	1.3	ND	ND
100401	0908628A-09A	8/24/2009	8/31/2009	2.00	1.3	2.6	14	29
100402	0908628A-10A	8/24/2009	8/31/2009	1.00	0.64	1.3	ND	ND
100403	0908628A-11A	8/24/2009	8/31/2009	1.00	0.64	1.3	ND	ND
100404	0908628A-12A	NA	8/31/2009	1.00	0.64	1.2	ND	ND
101170	0908628A-13A	8/25/2009	8/31/2009	1.00	0.64	1.2	ND	ND
101171	0908628A-14A	8/25/2009	8/31/2009	1.00	0.64	1.2	ND	ND
101172	0908628A-15A	8/25/2009	8/31/2009	2.00	1.3	2.4	16	30
101172 Lab Duplicate	0908628A-15AA	8/25/2009	8/31/2009	2.00	1.3	2.4	16	30
101173	0908628A-16A	8/25/2009	8/31/2009	1.00	0.64	1.2	ND	ND
Method Blank	0908628A-17A	NA	8/31/2009	1.00	0.64	1.2	ND	ND
Method Blank	0908628A-17B	NA	8/31/2009	1.00	0.64	1.2	ND	ND
Method Blank	0908628A-17C	NA	8/31/2009	1.00	0.64	1.2	ND	ND
CCV	0908628A-18A	NA	8/31/2009	1.00	0.64	1.2	%Rec 104	

COMMENTS: 1. NA=Not Applicable

2. ND=Not Detected

3. Exposure time of 21600 minutes was assumed for the QC samples.

4. Background subtraction not performed.

# Ozone Radiello Calculation Worksheet

Workorder #: **0908628A**  
 Sampling Rate (mL/min): 24.6 Typically 24.6 for Ozone  
 Sampling T (deg C): 25 Typically 25  
 Volume (mL): 5 Typically 5 for Ozone  
 Date of Analysis: 8/31/2009

$$\frac{(\text{Abs}-Y\text{-int}) \times DF}{\text{Slope}} = \frac{\text{Conc} (\mu\text{g}) \times 100000}{Q \times \text{Duration}} \text{ Low Point} \times DF$$

$$\frac{(\mu\text{g}) \times 1000000}{Q \times \text{Duration}}$$

LabSampleID	Client	Ozone taking into account Temp	Abs	Duration (min)	DF	Ozone Conc (ug)	Conc (ug/m3)	RL(ug)	RL (ug/m3)	Result (ug)
01A	101537	8/24/2009	0.085	18720	1.00	0.568240154	1.234	0.638	1.386	ND
02A	101538	NA	0.032	21600	1.00	0.071479324	0.135	0.638	1.201	ND
03A	101539	8/24/2009	0.076	18720	1.00	0.483884541	1.051	0.638	1.386	ND
04A	100493	8/24/2009	0.074	18720	1.00	0.46513885	1.010	0.638	1.386	ND
05A	100494	8/24/2009	0.076	18720	1.00	0.483884541	1.051	0.638	1.386	ND
06A	100495	8/24/2009	1.343	18720	1.00	12.35928022	26.84	0.638	1.386	12.35928022
06AA	100495 Lab Duplicate	8/24/2009	1.347	18720	1.00	12.39677161	26.92	0.638	1.386	12.39677161
07A	100399	8/24/2009	0.045	20160	1.00	0.19332632	0.390	0.638	1.287	ND
08A	100400	8/24/2009	0.052	20160	1.00	0.258936241	0.522	0.638	1.287	ND
09A	100401	8/24/2009	0.788	20160	2.00	14.31470156	28.86	0.638	1.277	14.31470156
10A	100402	8/24/2009	0.044	20160	1.00	0.183953474	0.371	0.638	1.287	ND
11A	100403	8/24/2009	0.063	20160	1.00	0.362037545	0.730	0.638	1.287	ND
12A	100404	NA	0.079	21600	1.00	0.043360787	0.082	0.638	1.201	ND
13A	101170	8/25/2009	0.067	21600	1.00	0.399528929	0.752	0.638	1.201	ND
14A	101171	8/25/2009	0.050	21600	1.00	0.240190549	0.452	0.638	1.201	ND
15A	101172	8/25/2009	0.866	21600	2.00	15.77686551	29.69	0.638	1.277	15.77686551
15AA	101172 Lab Duplicate	8/25/2009	0.869	21600	2.00	15.83310259	29.80	1.277	2.403	15.83310259
16A	101173	8/25/2009	0.057	21600	1.00	0.30580047	0.576	0.638	1.201	ND
17A	Method Blank	NA	0.035	21600	1.00	-0.228451743	#DIV/0!	0.638	#DIV/0!	ND
17B	Method Blank	NA	0.032	21600	1.00	-0.228451743	#DIV/0!	0.638	#DIV/0!	ND
17C	Method Blank	NA	0.027	21600	1.00	-0.228451743	#DIV/0!	0.638	#DIV/0!	ND
18A	CCV	NA	0.734	21600	1.00	6.651217105	12.52	0.638	1.201	6.651217105

QC Duration 21600  
 CCV Spike Amt 6.384

**Date of Calibration**  
**8/31/2009 Linear Regression**

0.106691182  
0.024373786  
0.99920911



## QC Results and Raw Data

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## Spectrophotometer Logbook

@Air Toxics Ltd.

Log Book #: 1564Work Order: 0908628ADate: 8/3/09Method: Rad 172Analyst: A. ToyamaWavelength: 430 nm

Prep. Notes:

Standard ID	Concentration	ABS
1858-24-5.7	5.7 $\mu$ g/mL	0.078
-11.4	11.4	0.160
-22.8	22.8	0.300
-57	57	0.729
-114	114	1.375

$$r = 0.024373786$$

$$m = 0.10669118$$

$$b = 0.99920911$$

Fraction	Dilution	ABS	Sample ID	Sample Volume
01A	1.00	0.085	101537	50 mL
02A		0.032	8	
03A		0.076	9	
04A		0.074	100493	
05A		0.076	94	
06A		1.343	95	
07A		0.045	100319	
08A		0.052	400	
09A	2.00	0.788	401	
10A	1.00	0.044	402	
11A		0.063	403	
12A		0.029	404	
13A		0.067	101170	
14A		0.050	171	
15A	2.00	0.866	172	

Notes: Blank cartridges: Lot: 0914K6

# Spectrophotometer Logbook

@Air Toxics Ltd.

Log Book #: 1564

Work Order: 0908628A

Date: \_\_\_\_\_ Method: \_\_\_\_\_  
 Analyst: \_\_\_\_\_ Wavelength: \_\_\_\_\_  
 Prep. Notes: \_\_\_\_\_

8/2/09  
 Act  
 Cont. from page 31

Standard ID	Concentration	ABS

r = \_\_\_\_\_  
 m = \_\_\_\_\_  
 b = \_\_\_\_\_

Fraction	Dilution	ABS	Sample ID	Sample Volume
IGA	1.00	0.057	101173	5.0 mL
OGA/A	1.00	1.347	100495	↓
ISA/A	2.00	0.869	101172	↓
BIK	1.00	0.035	NA	↓
BIK	↓	0.032	↓	↓
BIK	↓	0.027	↓	↓
LCS/ccv	↓	0.734	NA	↓

8/31/09  
 Act

Notes: ccv/LCS prepared at 57 ug/mL

## Spectrophotometer Standard Preparation Log

@Air Toxics Ltd. Log Book #: 1858Standard ID: 1858-24Project: Rad 172 Calibration SolutionAnalyst: A. ToyamaPreparation Date: 8/31/09Expiration Date: 8/31/09Solvent: DI H<sub>2</sub>OSolvent Lot #: NA

Procedure/Comments: Dissolve 20 µl of 4-Pyridine - carboxaldehyde, 97%  
(1476-1103, Located F2214) in 200 ml DI H<sub>2</sub>O. From this solution prepare  
dilutions at 1:2, 1:5, 1:10, 1:20 and ~~1:40~~ <sup>8/31/09 AT</sup>. Stock Solution = 114 µg/ml

1:2) 250 µl Pyridine solution with 250 µl of DI H<sub>2</sub>O = 57 µg/ml

1:5) 100 µl of Pyridine solution with 400 µl of DI H<sub>2</sub>O = 22.8 µg/ml

1:10) 100 µl of Pyridine solution with 900 µl of DI H<sub>2</sub>O = 11.4 µg/ml

1:20) 250 µl of Pyridine 1:10 solution with 250 µl of DI H<sub>2</sub>O = 5.7 µg/ml  
(then remove 250 µl of 1:10 solution to yield final volume of 0.5 ml)

Then add 4.5 ml of MBTH solution to each level, stir  
and let stand for 1 hour (cover with parafilm) Then read  
absorbance at 430 nm.

1 µg of 4-pyridylaldehyde = 0.224 µg of ozone

8/31/09  
AT

## **Shipping/ Receiving Documents**

---

**180 Blue Ravine Road, Suite B  
Folsom, CA 95630**

**Phone (916) 985-1000 FAX (916) 985-1020  
Hours 8:00 A.M. to 6:00 P.M. Pacific**

COMPANY: Environmental Health & Engineering, Inc.  
ATTENTION: Mr. Taeko Minegishi  
FAX #: 781-247-4305  
FROM: Sample Receiving  
Workorder #: 0908628A  
# of pages (Including Cover): 4

9/18/2009

Thank you for selecting Air Toxics Ltd. We have received your samples and have found discrepancies. In order to expedite analysis and reporting, please review the attached information for accuracy.

Corrections can be faxed to **Ausha Scott at 916-985-1020.**

ATL will proceed with the analysis as specified on the Chain of Custody and Sample Login page.

In accordance with your company's contract, this account is required to have a PO that is fully executed by both parties which also covers the cost of the workorder before any data can be released. Please ensure that you have given all appropriate information to our Project Manager so that there will be no delay in reporting of the data you are requesting.

*Your prompt response is appreciated.*

FROM: Environmental Health and Engineering, Inc.  
117 Fourth Avenue  
Needham, MA 02494-2725

TO: AIR TOXICS

Please send invoices to ATTN: Accounts Payable  
Please send reports to ATTN: Data Coordinator

In all correspondence regarding this matter, please refer to EH&E Project # 16512

The cost of this analysis will be covered by EH&E Purchase Order # 16512

For EH & E Data Coordinator - URGENT DATA ☒

SAMPLE ID	SAMPLE TYPE	ANALYTICAL METHOD/NUMBER	START	OTHER: Time/Date/Vol.
01A 101537	NR/PASSIVE	OZONE ANALYSIS	8/11/09	8/24/09
02A 101538				8
03A 101539				8/24/09
04A 100493				
05A 100494				
06A 100495				
07A 100399			8/10/09	8/24/09
08A 100400				
09A 100401				
10A 100402				
11A 100403				
12A 100404				
13A 101170			8/10/09	8/25/09
14A 101171				
15A 101172				
16A 101173				

Special Instructions:

☒ Standard turn around time

☐ Rush by \_\_\_\_\_ date/time

☐ Other Interfax 2704 2333 18%

☐ Fax results 781-247-4305

☐ RETURN SAMPLES

☒ Electronic transfer - datacoordinator

☒ Additional report recipient

info@regula-chem.com



Each signatory please return one copy of this form to the above address

Relinquished by: [Signature] of Environmental Health & Engineering, Inc. Date: 8/27/09

Received by: [Signature] 0850 of (company name) ATI Date: 8/28/09

Relinquished by: \_\_\_\_\_ of (company name) \_\_\_\_\_ Date: \_\_\_\_\_

Received by: \_\_\_\_\_ of (company name) \_\_\_\_\_ Date: \_\_\_\_\_

Relinquished by: \_\_\_\_\_ of (company name) \_\_\_\_\_ Date: \_\_\_\_\_

Received by: \_\_\_\_\_ of (company name) \_\_\_\_\_ Date: \_\_\_\_\_

Lab Data

Received by: \_\_\_\_\_ of Environmental Health & Engineering, Inc. Date: \_\_\_\_\_

## SAMPLE RECEIPT SUMMARY

**WORKORDER 0908628A**

**Client**

Mr. Taeko Minegishi  
Environmental Health &  
Engineering, Inc.  
117 Fourth Avenue  
Needham, MA 02494

**Phone**

800-825-5343

**Fax**

781-247-4305

**Date Promised:** 09/09/09 11:59 pm

**Date Completed:** 9/17/09

**Date Received:** 8/28/09

**PO#:** 16512

**Project#:** 16512

**Sales Rep:** TL

**Total \$:** \$ 880.00

**Logged By:** MG

<u>Fraction</u>	<u>Sample #</u>	<u>Analysis</u>	<u>Collected</u>	<u>Amount\$</u>
01A	101537	ATL Applications	8/24/2009	\$50.00
02A	101538	ATL Applications	NA	\$50.00
03A	101539	ATL Applications	8/24/2009	\$50.00
04A	100493	ATL Applications	8/24/2009	\$50.00
05A	100494	ATL Applications	8/24/2009	\$50.00
06A	100495	ATL Applications	8/24/2009	\$50.00
06AA	100495 Lab Duplicate	ATL Applications	8/24/2009	\$0.00
07A	100399	ATL Applications	8/24/2009	\$50.00
08A	100400	ATL Applications	8/24/2009	\$50.00
09A	100401	ATL Applications	8/24/2009	\$50.00
10A	100402	ATL Applications	8/24/2009	\$50.00
11A	100403	ATL Applications	8/24/2009	\$50.00
12A	100404	ATL Applications	NA	\$50.00
13A	101170	ATL Applications	8/25/2009	\$50.00
14A	101171	ATL Applications	8/25/2009	\$50.00
15A	101172	ATL Applications	8/25/2009	\$50.00
15AA	101172 Lab Duplicate	ATL Applications	8/25/2009	\$0.00
16A	101173	ATL Applications	8/25/2009	\$50.00
17A	Method Blank	ATL Applications	NA	\$0.00
17B	Method Blank	ATL Applications	NA	\$0.00

**Note:** Samples received after 3 P.M. PST are considered to be received on the following work day.  
Atlas Project Name/Profile#: CPSC Indoor Air Monitoring/13297

**BILL TO:** Accounts Payable  
Environmental Health & Engineering, Inc.  
117 Fourth Avenue  
Needham, MA 02494

Analysis Code: Other GC

**TERMS:**

Reporting Method: ATL Application #62 Ozone-Radiello 172

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630  
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020



## SAMPLE RECEIPT SUMMARY Continued

**Client**

Mr. Taeko Minegishi  
Environmental Health &  
Engineering, Inc.  
117 Fourth Avenue  
Needham, MA 02494

**Phone**

800-825-5343

**Fax**

781-247-4305

**Date Promised:** 09/09/09 11:59 pm

**Date Completed:** 9/17/09

**Date Received:** 8/28/09

**PO#:** 16512

**Project#:** 16512

**Total \$:** \$ 880.00

**Logged By:** MG

**Sales Rep:** TL

<u>Fraction</u>	<u>Sample #</u>	<u>Analysis</u>	<u>Collected</u>	<u>Amount\$</u>
17C	Method Blank	ATL Applications	NA	\$0.00
18A	CCV	ATL Applications	NA	\$0.00
Misc. Charges eCVP (16) @ \$5.00 each.				\$80.00

**Note:** Samples received after 3 P.M. PST are considered to be received on the following work day.  
Atlas Project Name/Profile#: CPSC Indoor Air Monitoring/13297

**BILL TO:** Accounts Payable  
Environmental Health & Engineering, Inc.  
117 Fourth Avenue  
Needham, MA 02494

Analysis Code: Other GC

**TERMS:**

Reporting Method: ATL Application #62 Ozone-Radiello 172

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630  
(916) 985-1000 . (800) 985-5955 . FAX (916) 985-1020

## Other Records

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Method : ATL Application #62 Ozone-Radiello 172

CAS Number	Compound	Rpt. Limit (ug)
10028-15-6	Ozone	1.0

**Unusual circumstances have been documented in the notes section below**

**CIRCLE (YES / NO)**

Lab Blank, CCV, LCS and DUP met QC criteria  
Hold time is met for all samples  
Appropriate data qualifier flags are applied  
Manual integrations for samples and QC are properly documented  
Samples analyzed within the project or method specific clock  
Retention times have been verified  
Appropriate ICAL(s) included  
At least one result per sample is verified against the target quant sheets/raw data

**Client LUMEN report reviewed for accuracy and completeness**

Dup: 06A, 15A

M/Q:

**Q**  
(QA Review/Date)

A1: by 9/11/05

R:

A<sub>2</sub>: \_\_\_\_\_ T: \_\_\_\_\_

**Note (2): Management reviewer and reporting reviewer must be separate individuals.**